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2021-06-15

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Tello , F , Verdu , J R , Rossini , M & Zunino , M 2021 , ' Onthophagus pilauco sp. nov.  
(Coleoptera, Scarabaeidae) : evidence of beetle extinction in the Pleistocene- Holocene  
transition in Chilean Northern Patagonia ' , ZooKeys , no. 1043 , pp. 133-145 . <https://doi.org/10.3897/zookeys.1043>.

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<http://hdl.handle.net/10138/332675>

<https://doi.org/10.3897/zookeys.1043.61706>

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# Onthophagus pilauco sp. nov. (Coleoptera, Scarabaeidae): evidence of beetle extinction in the Pleistocene–Holocene transition in Chilean Northern Patagonia

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Academic editor: Andrey Frolov | Received 5 December 2020 | Accepted 18 April 2021 | Published 15 June 2021

<http://zoobank.org/B38C0C9B-D6AA-4473-9839-C6DEF8E9FD3B>

Citation: Tello F, Verdú JR, Rossini M, Zunino M (2021) *Onthophagus pilauco* sp. nov. (Coleoptera, Scarabaeidae): evidence of beetle extinction in the Pleistocene–Holocene transition in Chilean Northern Patagonia. ZooKeys 1043: 133–145. <https://doi.org/10.3897/zookeys.1043.61706>

## Abstract

The South American Pleistocene–Holocene transition has been characterized by drastic climatic and diversity changes. These rapid changes induced one of the largest and most recent extinctions in the megafauna at the continental scale. However, examples of the extinction of small animals (e.g., insects) are scarce, and the underlying causes of the extinction have been little studied. In this work, a new extinct dung beetle species is described from a late Pleistocene sequence (~15.2 k cal yr BP) at the paleoarcheological site Pilauco, Chilean Northern Patagonia. Based on morphological characters, this fossil is considered to belong to the genus *Onthophagus* Latreille, 1802 and named *Onthophagus pilauco* sp. nov. We carried out a comprehensive revision of related groups, and we analyzed the possible mechanism of diversification and extinction of this new species. We hypothesized that *Onthophagus pilauco* sp. nov. diversified as a member of the *tesquatis* species-complex following migration processes related to the Great American Biotic Interchange (~3 Ma). The extinction of *O. pilauco* sp. nov. may be related to massive defaunation and climatic changes recorded in the Pleistocene–Holocene transition (12.8 k cal yr BP). This finding is the first record of this genus in Chile, and provides new evidence to support the collateral-extinction hypothesis related to the defaunation.

## Keywords

Dung beetle, extinction, fossil beetles, new species, Pleistocene, South America



















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